U.S. Department of Labor
MSHA
Mine Safety and Health Administration

MSHA's Accident Prevention Program
Safety Idea

Safety and Health are Values!

Proper Blocking

From 2001-2005, failing to block against hazardous motion was one of the most frequently cited regulations when investigating serious accidents and fatalities. Proper blocking against motion requires a risk assessment to evaluate the various pivot points and studying the job to ask, "what can happen?". Proper blocking includes using manufacturer provided safety pins, frame locks, and/or wooden blocking to prevent unwanted or sudden movement. For more information please see **Blocking Raised Equipment** (AP tag # 93525).

Accident: The victim was working in the articulation area of the front-end loader when it unexpectedly pivoted, crushing the victim.

Important: Never work or travel in the loader's articulation area without engaging the steering frame lock or without using another means of preventing motion.

Accident: The victim was removing toggle seat wedge bolts on a jaw crusher so that the broken pitman toggle seat could be replaced. The safety pins, provided by the manufacturer, had not been installed nor had other steps been taken to block/secure this component. The pitman assembly shifted and pinned the victim against the crusher framework.

Important: Before working on equipment, lock out the power and block equipment components from movement.

Accident: The front and rear sections of the front end loader had been separated at the articulation joint and each section was independently supported with jack stands. As the victim began climbing the ladder, he leaned against the separated rear portion. The rear frame of the loader tipped and swiveled to the left on the rear axle oscillation trunnion, pinning the victim between the left rear tire and the frame.

Important: Securely block equipment against all hazardous motion at all times while performing maintenance work. If the equipment being blocked has multiple degrees of movement of freedom, exercise extreme caution because some instability modes may not be obvious.

To prevent blocking of motion accidents:

- Study the manufacturer's maintenance manual for safety precautions and recommended blocking securing procedures BEFORE initiating repairs.
- If provided, always use the manufacturers provided safety device or features for securing components against motion.
- Avoid steel on steel blocking if at all possible as these two surfaces together can easily slide thus reducing the effectiveness of the motion prevention design.
- Avoid using long, slender members as blocking in situations where the blocking will be loaded in compression. These types of members may be prone to buckling failure.
- The ground on which the blocking is to be placed must be capable of supporting the loads transferred from the equipment. To prevent the blocking from punching into the ground, larger plates or blocking may be necessary to spread the load over a wider area.

If you have a tip you would like to pass on, you can e-mail it to zzMSHA-MinersTips@dol.gov.
If your tip is selected, you will receive credit in this space.

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